



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,396	06/27/2003	Stephen St. Germain	ONS00494	4802
7590	09/22/2004		EXAMINER TRAN, THIEN F	
James J. Stipanuk Semiconductor Components Industries, L.L.C. Patent Administration Dept - MD/A700 P.O. Box 62890 Phoenix, AZ 85082-2890			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,396

Applicant(s)

GERMAIN ET AL.

Examiner

Thien F Tran

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 7, 10, 12, 14-16 and 19-32 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33-42 is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 9, 11, 13, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group I (claims 1-18 and 33-42) in the reply filed on 09/07/2004 is acknowledged.

Applicant's election with traverse of species 1 (Figures 1-2 and 5) with claims 1-6, 8-9, 11, 13, 17-18, 33, 35-37 and 42 readable on species 1 in the reply filed on 09/07/2004 is acknowledged. The traversal is on the ground(s) that there is no valid ground for the species restriction. This is not found persuasive because applicant does not provide evidence or identify the species to be obvious variants of each other. Also, it is well settled that species are required to be restricted if it is shown that these species are distinct. It is clearly established that embodiments 1-7 are in fact distinct in Paper Mailed date 08/16/2004.

The requirement is still deemed proper and is therefore made FINAL.

Claims 33 is generic and allowable. Accordingly, the restriction requirement as to the encompassed species is hereby withdrawn and claims 34 and 38-41, directed to the species of embodiments 2-7 are no longer withdrawn from consideration since all of the claims to this species depend from or otherwise include each of the limitations of an allowed generic claim. However, claims 7, 10, 12 and 14-16, directed to the species of embodiments 2-7 remain withdrawn from consideration since they do not all depend upon or otherwise include all the limitations of an allowed generic claim as required by 37 CFR 1.141.

In view of the above noted withdrawal of the restriction requirement as to the linked species, applicant(s) are advised that if any claim(s) depending from or including all the limitations of the allowable generic linking claim(s) be presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-5, 8, 11, 13, 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Sakamoto et al. (US 6,624,511).

Sakamoto et al. discloses the claimed electronic device package (Figure 8) comprising: a support substrate 60 including a flag 51A, wherein the flag has bonding surface; a first electronic chip 52A having a first peripheral edge, wherein the electronic chip is attached to a first portion of the bonding surface with a first die attach material 55C; a first continuous trench 61 formed in the flag in proximity to the first peripheral

Art Unit: 2811

edge, wherein the first continuous trench includes a curved sidewall surface and an inner edge adjacent to the first peripheral edge; and an encapsulant 50 covering the first electronic chip and at least a portion of the curved sidewall surface.

Regarding claim 3, the first continuous trench 61 comprises a continuously rounded cross-sectional shape.

Regarding claim 4, the first continuous trench 61 has a cross-sectional shape comprising an inverse omega shape.

Regarding claim 5, the first continuous trench 61 has a rounded corner.

Regarding claim 8, the first peripheral edge is spaced a distance inside the inner edge of the first continuous trench 61.

Regarding claim 11, at least a portion of the first die attach material 55C extends to the inner edge of the first continuous trench, the first continuous trench 61 is substantially absent die attach material.

Regarding claim 13, the die attach material 55C is selected from a group consisting of a eutectic solder, a solder paste, a conductive epoxy, a polyimide film, a metal filled glass, and a pre-form structure.

Regarding claim 17, the support substrate 60 further includes a bonding site 51B having a bonding surface, and a bonding device 55A coupling the first electronic chip 52A to the bonding site, and the encapsulant 50 covers the bonding device and the bonding surface of the bonding site.

Regarding claim 18, the first continuous trench 61 comprises an etched trench.

Claims 1-3, 5, 8, 13, 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasebe et al. (US 6,713,849).

Hasebe et al. discloses the claimed electronic device package (Figures 5, 6, 9, 17) comprising: a support substrate including a flag 4, wherein the flag has bonding surface; a first electronic chip 3 having a first peripheral edge, wherein the electronic chip is attached to a first portion of the bonding surface with a first die attach material 5; a first continuous trench 20 formed in the flag in proximity to the first peripheral edge, wherein the first continuous trench includes a curved sidewall surface and an inner edge adjacent to the first peripheral edge; and an encapsulant 2 covering the first electronic chip and at least a portion of the curved sidewall surface.

Regarding claim 2, the first continuous trench 20 surrounds the first electronic chip.

Regarding claim 3, the first continuous trench 20 comprises a continuously rounded cross-sectional shape.

Regarding claim 5, the first continuous trench 20 has a rounded corner.

Regarding claim 8, the first peripheral edge is spaced a distance inside the inner edge of the first continuous trench 20.

Regarding claim 13, the die attach material 5 is selected from a group consisting of a eutectic solder, a solder paste, a conductive epoxy, a polyimide film, a metal filled glass, and a pre-form structure.

Regarding claim 17, the support substrate further includes a bonding site 7 having a bonding surface, and a bonding device 25 coupling the first electronic chip 3 to

Art Unit: 2811

the bonding site, and the encapsulant 2 covers the bonding device and the bonding surface of the bonding site.

Regarding claim 18, the first continuous trench 20 comprises an etched trench.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. (US 6,624,511).

Sakamoto et al. as described above discloses the first continuous trench having a depth of 50 microns but does not disclose the first continuous trench 61 having depth in range from about 100 microns to about 330 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the first continuous trench having the depth as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In re Daily, 93 USPQ 47 (CCPA 1966), the court held that changes in size and shape of parts of an invention in the absence of an unexpected result involves routine skill in the art. Additionally, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that where the only difference between the prior art and the claims was a recitation of

Art Unit: 2811

relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Regarding claim 9, Sakamoto et al. as described does not disclose the distance being less than about 635 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the distance being less than 635 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In re Daily, 93 USPQ 47 (CCPA 1966), the court held that changes in size and shape of parts of an invention in the absence of an unexpected result involves routine skill in the art. Additionally, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Allowable Subject Matter

Claims 33-42 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: prior art references do not teach or render obvious a leadless electronic structure having the structure arrangement as claimed in claim 33.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien F Tran whose telephone number is (571) 272-1665. The examiner can normally be reached on 8:30AM - 5:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tt
September 20, 2004


THIEN TRAN
PRIMARY EXAMINER